

(a) Be suitably protected against deterioration or loss of strength in service due to any cause, including—

- (1) Weathering;
- (2) Corrosion; and
- (3) Abrasion; and

(b) Have provisions for ventilation and drainage where necessary to prevent the accumulation of corrosive, flammable, or noxious fluids.

§ 27.610 Lightning and static electricity protection.

(a) The rotorcraft must be protected against catastrophic effects from lightning.

(b) For metallic components, compliance with paragraph (a) of this section may be shown by—

- (1) Electrically bonding the components properly to the airframe; or
- (2) Designing the components so that a strike will not endanger the rotorcraft.

(c) For nonmetallic components, compliance with paragraph (a) of this section may be shown by—

- (1) Designing the components to minimize the effect of a strike; or
- (2) Incorporating acceptable means of diverting the resulting electrical current so as not to endanger the rotorcraft.

(d) The electrical bonding and protection against lightning and static electricity must—

- (1) Minimize the accumulation of electrostatic charge;
- (2) Minimize the risk of electric shock to crew, passengers, and service and maintenance personnel using normal precautions;
- (3) Provide an electrical return path, under both normal and fault conditions, on rotorcraft having grounded electrical systems; and
- (4) Reduce to an acceptable level the effects of lightning and static electricity on the functioning of essential electrical and electronic equipment.

[Amdt. 27-21, 49 FR 44433, Nov. 6, 1984, as amended by Amdt. 27-37, 64 FR 45094, Aug. 18, 1999]

§ 27.611 Inspection provisions.

There must be means to allow the close examination of each part that requires—

- (a) Recurring inspection;

(b) Adjustment for proper alignment and functioning; or

- (c) Lubrication.

§ 27.613 Material strength properties and design values.

(a) Material strength properties must be based on enough tests of material meeting specifications to establish design values on a statistical basis.

(b) Design values must be chosen to minimize the probability of structural failure due to material variability. Except as provided in paragraphs (d) and (e) of this section, compliance with this paragraph must be shown by selecting design values that assure material strength with the following probability—

- (1) Where applied loads are eventually distributed through a single member within an assembly, the failure of which would result in loss of structural integrity of the component, 99 percent probability with 95 percent confidence; and

(2) For redundant structure, those in which the failure of individual elements would result in applied loads being safely distributed to other load-carrying members, 90 percent probability with 95 percent confidence.

(c) The strength, detail design, and fabrication of the structure must minimize the probability of disastrous fatigue failure, particularly at points of stress concentration.

(d) Design values may be those contained in the following publications (available from the Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120) or other values approved by the Administrator:

- (1) MIL-HDBK-5, “Metallic Materials and Elements for Flight Vehicle Structure”.
- (2) MIL-HDBK-17, “Plastics for Flight Vehicles”.
- (3) ANC-18, “Design of Wood Aircraft Structures”.
- (4) MIL-HDBK-23, “Composite Construction for Flight Vehicles”.

(e) Other design values may be used if a selection of the material is made in which a specimen of each individual item is tested before use and it is determined that the actual strength